It is well known that the Walsh-Fourier expansion of a function from the block space $\mathcal{B}, ([0,1)), 1 < q \leq \infty$, converges pointwise a.e. We prove that the same result is true for the expansion of a function from $\mathcal{B}$, in certain periodized smooth periodic non-stationary wavelet packets bases based on the Haar filters. We also consider wavelet packets based on the Shannon filters and show that the expansion of L^p-functions, $1 < p < \infty$, converges in norm and pointwise almost everywhere.